CLAIMS

1. A surface analysis device for identifying molecules by simultaneously scanning nanocodes on a surface of a substrate, comprising:

a scanning array capable of simultaneously scanning the nanocodes on the surface of the substrate; and

an analyzer coupled with the scanning array capable of receiving simultaneously scanned information from the scanning array and identifying molecules associated with the nanocodes.

2 The device of claim 1, wherein simultaneously scanning includes measuring the friction characteristics of the substrate and the nanocodes.

3. The device of claim 2, wherein the scanning array includes two or more atomic force microscopy (AFM) tips.

4. The device of claim 3, wherein the scanning array is a 3x3 array of AFM tips.

5. The device of claim 1, wherein simultaneously scanning includes measuring the electrical properties of the substrate and the nanocodes.

6. The device of claim 5, wherein the scanning array includes two or more scanning tunneling microscopy (STM) tips.

7. The device of claim 6, wherein the scanning array is a 3x3 array of STM tips.

8 The device of claim 1, wherein simultaneously scanning includes:
measuring the friction characteristics of the substrate and the nanocodes, and
measuring the electrical properties of the substrate and the nanocodes.

9. The device of claim 8, wherein the scanning array includes a combination of atomic force microscopy (AFM) and scanning tunneling microscopy (STM) tips.

10. The device of claim 9, wherein the scanning array is a 3x3 array of tips.

11. The device of claim 1, wherein simultaneously scanning includes parallel scanning of the surface by the scanning array.

12. The device of claim 1, wherein the molecules include DNA molecules.

13 The device of claim 1, further comprising a substrate holder.

14. The device of claim 1, wherein the nanocodes include molecular assay labels.

15. A surface analysis device for identifying molecules by simultaneously scanning nanocodes on a surface of a substrate, comprising:

a substrate holder;

a scanning array proximate the substrate holder capable of moving in relation to the substrate holder and simultaneously scanning nanocodes on the surface of the substrate; and

an analyzer coupled with the scanning array capable of receiving simultaneously scanned information from the scanning array and identifying molecules associated with the nanocodes.

16 The device of claim 15, wherein simultaneously scanning includes measuring the friction characteristics of the substrate and the nanocodes.

17. The device of claim 15, wherein simultaneously scanning includes measuring with electrical characteristics of the substrate and the nanocodes.

18 The device of claim 15, wherein simultaneously scanning includes:

measuring the friction characteristics of the substrate and the nanocodes, and

measuring the electrical properties of the substrate and the nanocodes.

19. The device of claim 15, wherein simultaneously scanning includes parallel scanning of the substrate and nanocodes by the scanning array.

20. A method of identifying molecules by simultaneously scanning nanocodes on a surface of a substrate, comprising:

providing a substrate with nanocodes thereon; and

simultaneously scanning the nanocodes using a surface analysis device having a scanning array.

21. The method of claim 20, further comprising:

receiving the scanned information from the scanning array with an analyzer; and

identifying the molecules associated with the nanocodes.

22 The method of claim 20, wherein simultaneously scanning includes measuring the friction characteristics of the substrate and the nanocodes.

23. The method of claim 22, wherein the scanning array includes two or more atomic force microscopy (AFM) tips.

24 The method of claim 23, wherein the scanning array is a 3x3 array of AFM tips.

25. The method of claim 20, wherein simultaneously scanning includes measuring the electrical characteristics of the substrate and the nanocodes.

26. The method of claim 25, wherein the scanning array includes two or more scanning tunneling microscopy (STM) tips.

27. The method of claim 26, wherein the scanning array is a 3x3 array of STM tips.

28 The device of claim 20, wherein simultaneously scanning includes:

measuring the friction characteristics of the substrate and the nanocodes, and

measuring the electrical properties of the substrate and the nanocodes.

29. The device of claim 28, wherein the scanning array includes a combination of atomic force microscopy (AFM) and scanning tunneling microscopy (STM) tips.

30. The method of claim 20, wherein the nanocodes are organic elements.

31. The method of claim 20, wherein the nanocodes are inorganic elements.

32. The method of claim 20, wherein the nanocodes are biochemical elements.

33. A method of accelerated scanning of nanocodes on a substrate to identify molecules associated with the nanocodes, comprising:

simultaneously scanning the nanocodes using a scanning array having two or more microscopy tips;

receiving the simultaneously scanned information from the scanning array with an analyzer; and

identifying the molecules associated with the nanocodes.

34. The method of claim 33, wherein the microscopy tips are scanning tunneling microscopy (STM) tips.

35. The method of claim 33, wherein the microscopy tips are atomic force microscopy (AFM) tips.

36. The method of claim 33, wherein the microscopy tips are a combination of atomic force microscopy (AFM) and scanning tunneling microscopy (STM) tips.

37. The method of claim 33, wherein simultaneously scanning includes parallel scanning by the scanning array.